

Coastal Engineering Technical Note

SAND STABILIZATION WITH AMERICAN BEACHGRASS ON THE NORTH AND MIDDLE ATLANTIC AND GREAT LAKES COASTS

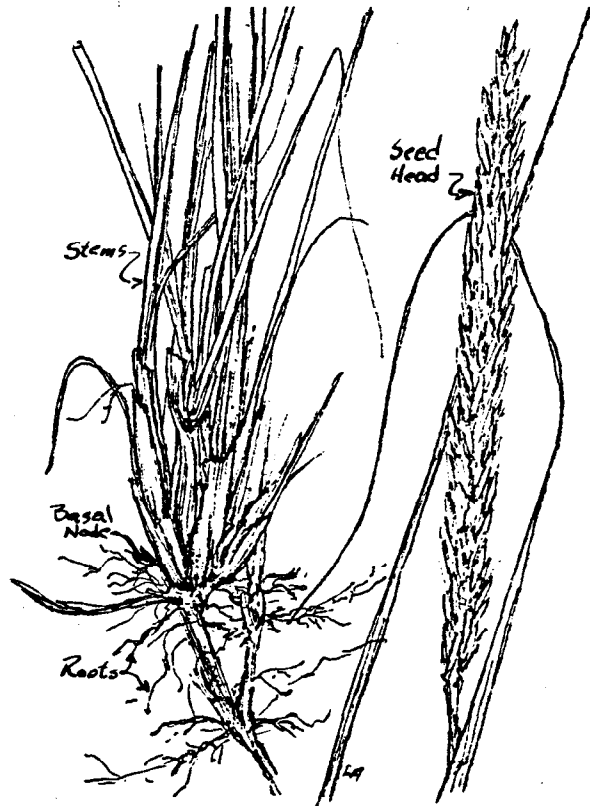
PROBLEM: How to plant American Beachgrass for dune creation and stabilization.

GENERAL: Foredunes function as a reservoir of sand to nourish eroding beaches during storms, and as a levee to prevent the inland penetration of waves and storm surges. Dunes are often created and maintained by the action of beach grasses which trap and hold wind-blown sand. Erosion will occur if this vegetation is damaged (as by drought, disease, over-grazing, or waves during severe storms). Damaged or destroyed dune systems can usually be restored by planting beach grasses.

PURPOSE: This note provides guidelines for creating and stabilizing foredunes using American Beachgrass (*Ammophila breviligulata*). These guidelines are restricted to coasts of the North and Middle Atlantic and Great Lakes coasts.

OBTAINING PLANT MATERIALS:

Beach grasses may be harvested from natural stands, propagated in a field nursery, or obtained from commercial growers. These sources are equally suitable for planting success.



American Beachgrass

To harvest, pull, or dig clumps from the sand; shake the clumps free of sand, separate into transplants with about three stems (culms) each. All transplants will not necessarily have roots, though a basal node should be present from which roots will develop after planting. Plants may be trimmed to a height of 15 to 20 inches to facilitate mechanical planting.

STORAGE: Most plants may be stored several weeks if their bases are wrapped with wet burlap and kept moist by covering with wet sand or placing in containers with 1 to 2 inches of freshwater. To reduce weight during transport, the roots and basal nodes may be dipped in a clay slurry, and the plants bundled and wrapped in reinforced paper.

PLANTING: Planting for stabilization for dune building is most likely to succeed when the planting coincides with the natural vegetation line or foredune line. The initial planting should be a strip 50 feet wide, parallel to, and 50 feet landward of the dune line. If a natural vegetation or foredune line is not evident, restoration should begin at least 250 to 300 feet inland from the high water line. Where beach recession is occurring, the dune location should be determined from the average erosion rate and the desired dune life. Another 50-foot-wide strip may be added immediately seaward 4 to 5 years later if a base of 100 feet has not been achieved by natural vegetative spread.

Transplanting may be by hand or with a tobacco or strawberry planter and a five-man crew. Hand planting by hand, holes should be staggered to allow maximum erosion control. Holes may be opened with a dibble, spud bar, or tilling spade. The base of the plant should be inserted to a depth of about 10 inches. When using a mechanical planter, rows of holes should be oriented parallel to the shoreline. Soil must be packed firmly around all plants to eliminate airspaces, prevent uprooting, and hold moisture.

American Beachgrass can be planted in October and November, but March through May is preferred to avoid exposure to winter storms.

FERTILIZATION: New stands will often benefit from the application of 100 to 150 pounds of nitrogen and 30 to 50 pounds of phosphate per acre the first growing season. Application should begin as soon as new growth emerges and the total for the year should be divided into two or three applications spaced 4 to 6 weeks apart. Fertilization after the first year should be adjusted to growth and appearance of the plants.

REPLANTING: Areas of total plant mortality or localized areas with less than 10 percent survival must be replanted. Normally expected uniform survival of 50 percent or more will not require replanting.

LABOR REQUIREMENTS: Harvesting and Processing

18-inch spacing	40 man-hours per acre
24-inch spacing	25 man-hours per acre
<u>Planting (mechanical)¹</u>	
18-inch spacing	45 man-hours per acre
24-inch spacing	25 man-hours per acre
<u>Total Labor</u>	
18-inch spacing	85 man-hours per acre
24-inch spacing	50 man-hours per acre

¹If hand planting, add 20 percent.

SAND ACCUMULATION: It should be noted that American Beachgrass planting captures little sand during the first growing season; but after the first growing season, established American Beachgrass plantings can trap sand at a rate of about 4.5 cubic yards per linear foot (11 cubic meters per meter) of beach.

REFERENCES:

KNUTSON, P.L., "Planting Guidelines for Dune Creation and Stabilization," CETA 77-4, U.S. Army, Corps of Engineers, Coastal Engineering Research Center, Fort Belvoir, VA., September 1977.

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WOODHOUSE, W.W., "Dune Building and Stabilization with Vegetation," SR-3, U.S. Army, Corps of Engineers, Coastal Engineering Research Center, Fort Belvoir, VA., September 1978.